



The U.S. Environmental Protection Agency's **ENERGY STAR® Program** promotes the use of high-efficiency technologies and equipment. ENERGY STAR labeled homes use at least 30% less energy than homes built to meet the national Model Energy Code while maintaining or improving indoor air quality. These fact sheets are designed to help consumers learn more about the energy-efficient improvements to their ENERGY STAR labeled homes.

# ENERGY EFFICIENT APPLIANCES

## APPLIANCE/LIGHTING IMPROVEMENT

Appliances use a significant portion of the energy used in a home, accounting for 35 percent of total energy use on average and up to 50 percent in mild climates. Residential energy use accounts for approximately 20 percent of the air pollution generated in the United States. Thus, energy-efficient appliances can prevent significant amounts of air pollution. With this in mind, the Environmental Protection Agency and Department of Energy now sponsor the ENERGY STAR Labeling Program. This voluntary program encourages manufacturers to display the ENERGY STAR label on equipment that meets or exceeds criteria for exemplary performance, typically within the top 25 percent of the most efficient products available. ENERGY STAR labeled appliances include refrigerators, dishwashers, and clothes washers.

All appliances sold in the United States must meet the minimum efficiency levels set by federal appliance standards. Although appliances made to these standards consume less energy than models made ten years ago, Figure 1 shows that substantial savings can be achieved by installing ENERGY STAR labeled appliances.

Refrigerators consume the most energy of any household appliance, more than 1300 kWh per year for the average model in use today. New models meeting federal standards consume less than 800 kWh per year and ENERGY STAR labeled refrigerators consume less than 600 kWh per year. These gains were achieved through increased insulation levels, better door seals, larger heat exchange coils, improved compressors, and more efficient motors.

Two-thirds of the energy consumed for dish washing is used to provide hot water. Energy-efficient dishwashers typically use less hot water per load. In addition, look for booster heaters which raise the temperature of the water entering the dishwasher allowing the hot water heater to be set at a lower temperature. Other features can include controls that allow you to match wash cycles to cleaning requirements and to use air instead of heat drying.

Of the energy consumed for clothes washing, more than 90 percent is used to provide hot water. Efficiency improvements in clothes washers include control strategies that use cooler wash and rinse water temperatures and automatic level controls to reduce water consumption. An even more efficient option is the horizontal axis washer. These washers, which are common in Europe and at Laundromats, use substantially less water than vertical axis washers. Currently, only horizontal axis washers have been able to meet the ENERGY STAR criteria. Both vertical and horizontal axis washers can benefit from a high speed spin cycle which extracts more water from the clothing and requires less energy for drying.

**FIGURE 1: COMPARISON OF STANDARD AND ENERGY STAR LABELED APPLIANCES**

Appliance	Annual Energy Cost <sup>1</sup>	
	Standard Model <sup>2</sup>	ENERGY STAR
<b>Refrigerators</b> — 18 to 20 C.F. with Top Freezer	\$63	\$50
<b>Dishwasher</b> — Electric/Gas Hot Water	\$47/\$26	\$42/\$24
<b>Clothes Washer</b> — Electric/Gas Hot Water	\$83/\$32	\$39/\$17

1. Based on a price of 8.6¢ per kWh for electricity and 60.0¢ per therm for natural gas.

2. Annual energy use for the Standard Model is sufficient to meet current federal appliance standards.

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### RESOURCES

***The Consumer Guide to Home Energy Savings*** (Wilson and Morrill) 5th edition, 1996, available from the American Council for an Energy Efficient Economy at 510-549-9914.

***Homemade Money*** (Heede and the staff of RMI), 1995, available from the Rocky Mountain Institute at 970-927-3851.

***Appliance Labeling*** fact sheet available from the Energy Efficiency and Renewable Energy Clearinghouse (EREC), P.O. Box 3048, Merrifield, VA 22116, 800-DOE-EREC (363-3732)

For a current list of ENERGY STAR appliances, visit the Department of Energy's website at <http://energystar.gov>

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Clothes dryers are usually made more efficient by adding moisture sensors. These devices measure moisture levels in dryers and turn the units off when a certain level is reached. Not only does this save energy by preventing over drying, it saves wear and tear on clothing.

Poor operation and maintenance of appliances can increase energy consumption. To ensure efficient operation, homeowners should read the manuals for their major appliances and familiarize themselves with proper operation and maintenance requirements.

### BENEFITS

Energy efficient appliances provide many impressive benefits including:

**Improved quality and durability.** Energy-efficient appliances often offer quality components, advanced technologies, and attention to detail surpassing those found in standard grade appliances. This can result in fewer mechanical problems, longer equipment life and, in many cases, extended manufacturer warranties. In addition, energy-efficient appliances tend to be high-end models that have more convenience features.

**Lower utility bills.** The average homeowner spends more than \$400 per year on their utility bills operating appliances. By upgrading to ENERGY STAR labeled appliances, homeowners can save between \$30 and \$150 per year.

**Quieter operation of equipment.** Look for increased insulation, smaller compressors on refrigerators, and more efficient motors on dishwashers, clothes washers, and dryers to decrease the amount of noise and vibration these appliances make while operating. This can result in a quieter home.